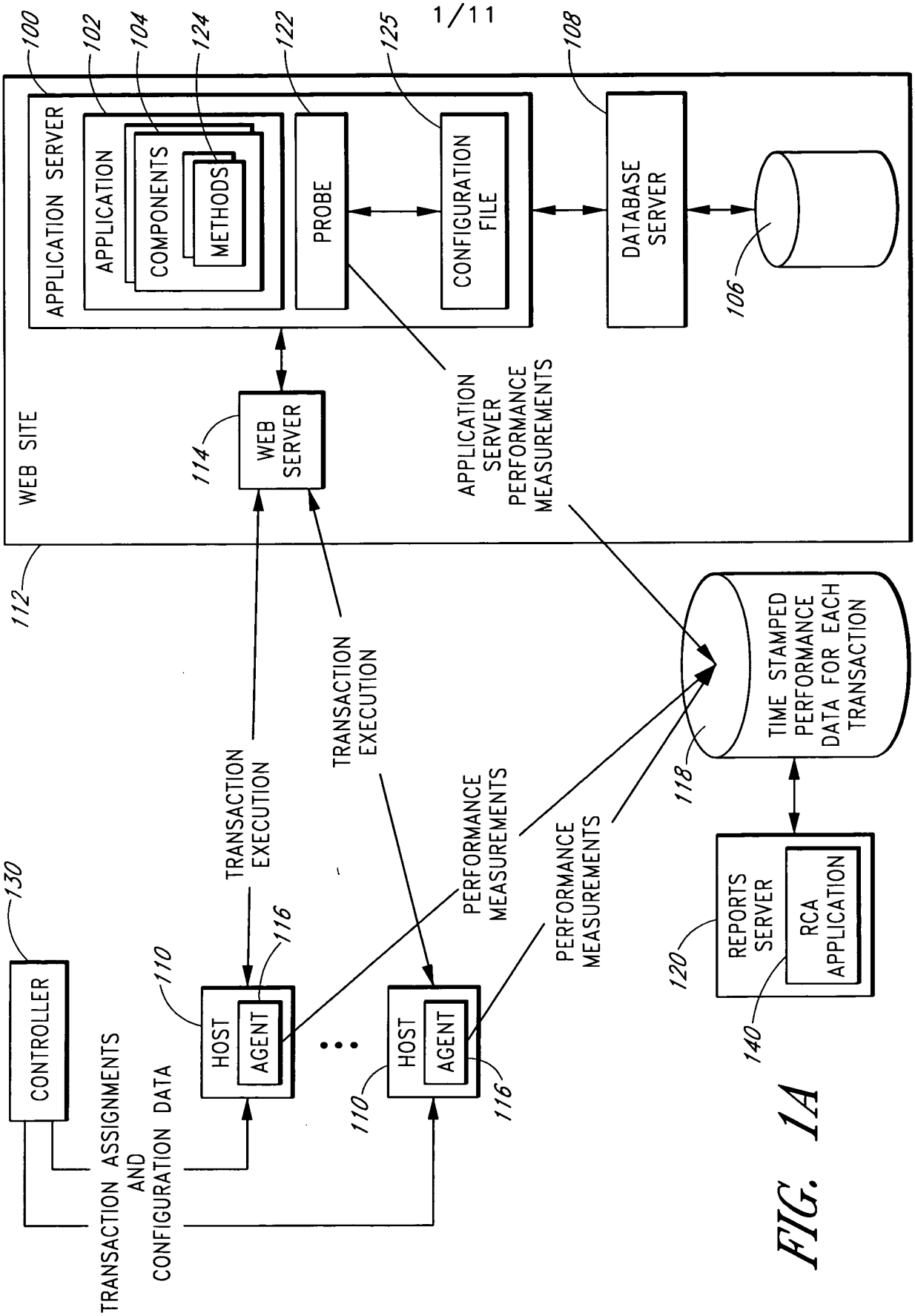

100
102
104
124
122
125
108
APPLICATION SERVER
APPLICATION
COMPONENTS
METHODS
PROBE
CONFIGURATION FILE
DATABASE SERVER
106
WEB SITE
114
WEB SERVER
APPLICATION SERVER PERFORMANCE MEASUREMENTS
112
TRANSACTION EXECUTION
TRANSACTION EXECUTION
PERFORMANCE MEASUREMENTS
PERFORMANCE MEASUREMENTS
TIME STAMPED PERFORMANCE DATA FOR EACH TRANSACTION
118
130
CONTROLLER
110
HOST
AGENT
116
110
HOST
AGENT
116
120
REPORTS SERVER
RCA APPLICATION
140
TRANSACTION ASSIGNMENTS AND CONFIGURATION DATA

FIG. 1A

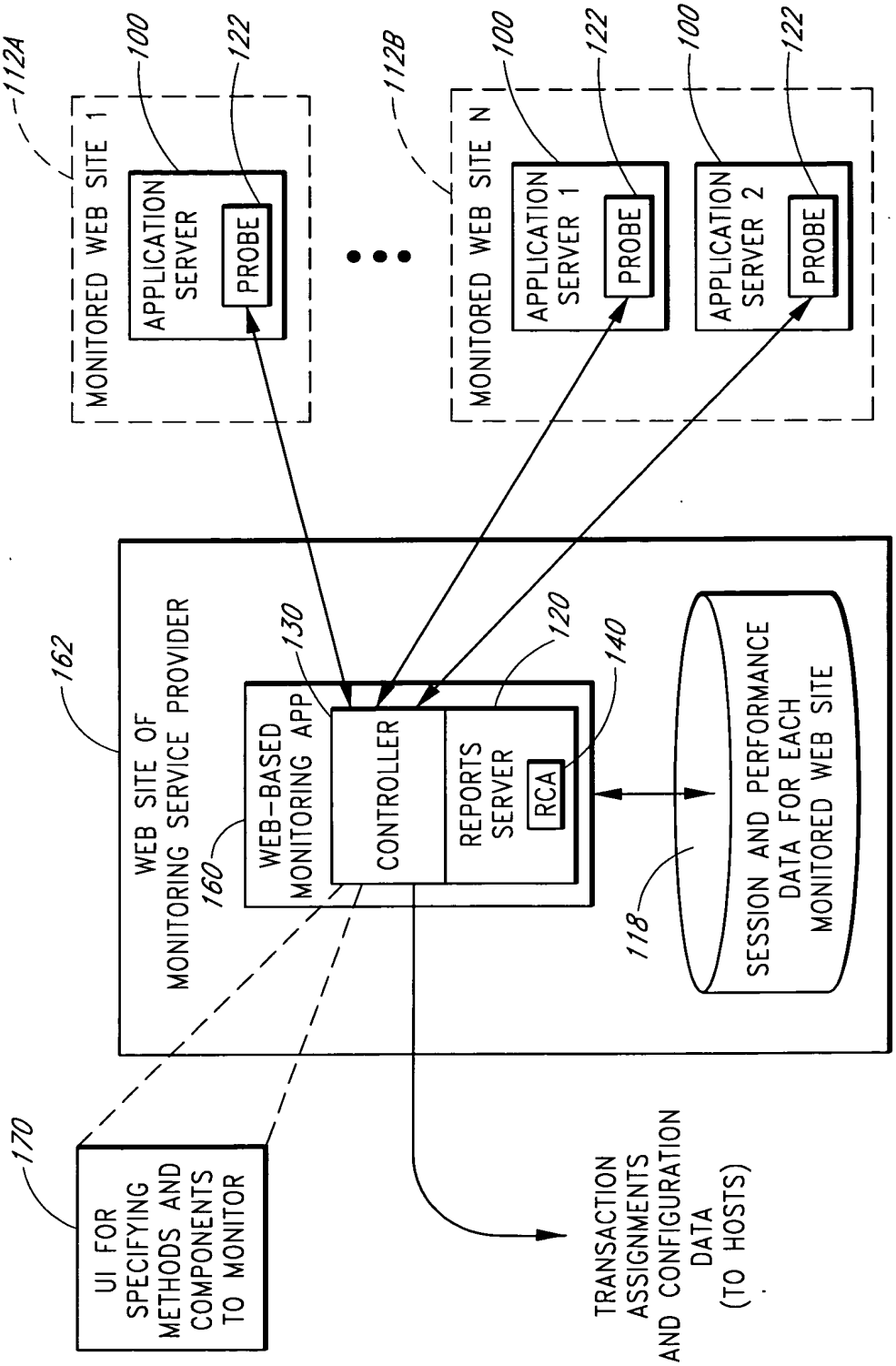

112A
MONITORED WEB SITE 1
100
APPLICATION SERVER
122
PROBE
112B
MONITORED WEB SITE N
100
APPLICATION SERVER 1
122
PROBE
100
APPLICATION SERVER 2
122
PROBE
162
WEB SITE OF MONITORING SERVICE PROVIDER
130
WEB-BASED MONITORING APP
160
CONTROLLER
120
REPORTS SERVER
RCA
140
118
SESSION AND PERFORMANCE DATA FOR EACH MONITORED WEB SITE
170
UI FOR SPECIFYING METHODS AND COMPONENTS TO MONITOR
TRANSACTION ASSIGNMENTS AND CONFIGURATION DATA (TO HOSTS)

FIG. 1B

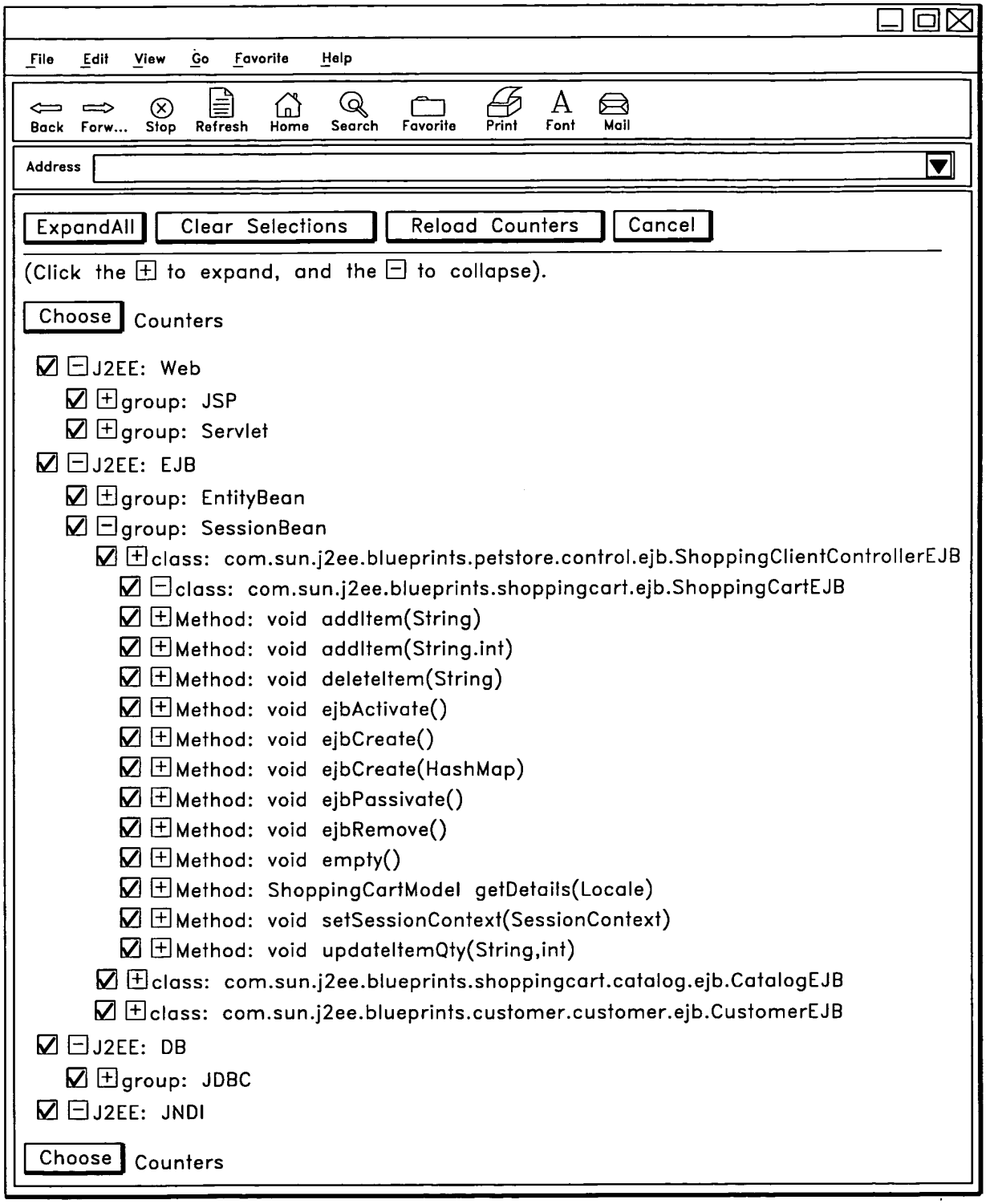

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address
ExpandAll
Clear Selections
Reload Counters
Cancel
(Click the ⊞ to expand, and the ⊟ to collapse).
Choose Counters
J2EE: Web
group: JSP
group: Servlet
J2EE: EJB
group: EntityBean
group: SessionBean
class: com.sun.j2ee.blueprints.petstore.control.ejb.ShoppingClientControllerEJB
class: com.sun.j2ee.blueprints.shoppingcart.ejb.ShoppingCartEJB
Method: void addItem(String)
Method: void addItem(String,int)
Method: void deleteItem(String)
Method: void ejbActivate()
Method: void ejbCreate()
Method: void ejbCreate(HashMap)
Method: void ejbPassivate()
Method: void ejbRemove()
Method: void empty()
Method: ShoppingCartModel getDetails(Locale)
Method: void setSessionContext(SessionContext)
Method: void updateItemQty(String,int)
class: com.sun.j2ee.blueprints.shoppingcart.catalog.ejb.CatalogEJB
class: com.sun.j2ee.blueprints.customer.customer.ejb.CustomerEJB
J2EE: DB
group: JDBC
J2EE: JNDI
Choose Counters

FIG. 1C

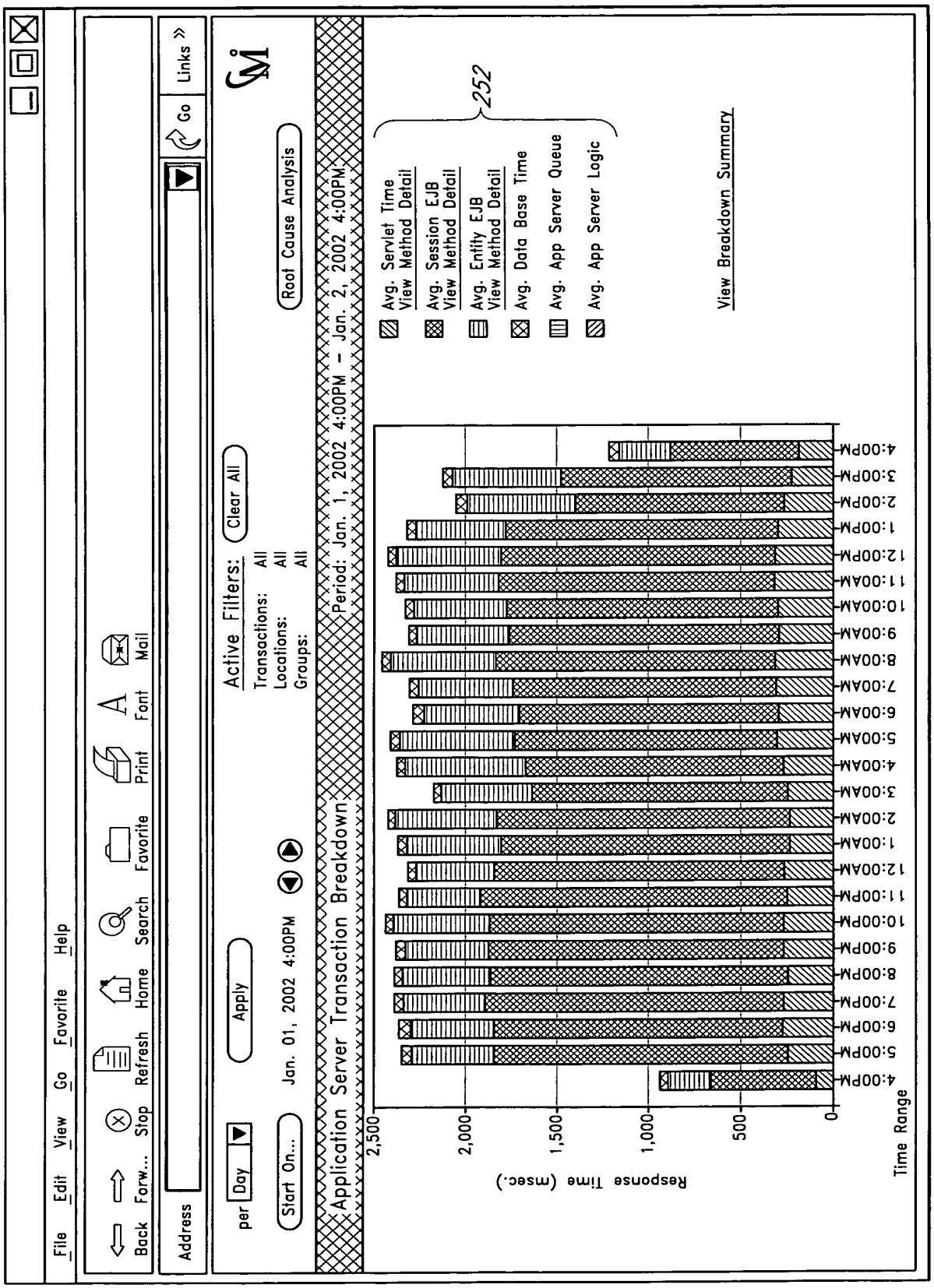

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address
Go Links »
Application Server Transaction Breakdown
per Day
Apply
Start On... Jan. 01, 2002 4:00PM
Active Filters: Clear All
Transactions: All
Locations: All
Groups: All
Root Cause Analysis
Period: Jan. 1, 2002 4:00PM - Jan. 2, 2002 4:00PM
252
Avg. Servlet Time View Method Detail
Avg. Session EJB View Method Detail
Avg. Entity EJB View Method Detail
Avg. Data Base Time
Avg. App Server Queue
Avg. App Server Logic
View Breakdown Summary
Response Time (msec.)
2,500
2,000
1,500
1,000
500
0
Time Range
4:00PM
3:00PM
2:00PM
1:00PM
12:00PM
11:00AM
10:00AM
9:00AM
8:00AM
7:00AM
6:00AM
5:00AM
4:00AM
3:00AM
2:00AM
1:00AM
12:00AM
11:00PM
10:00PM
9:00PM
8:00PM
7:00PM
6:00PM
5:00PM
4:00PM

FIG. 2

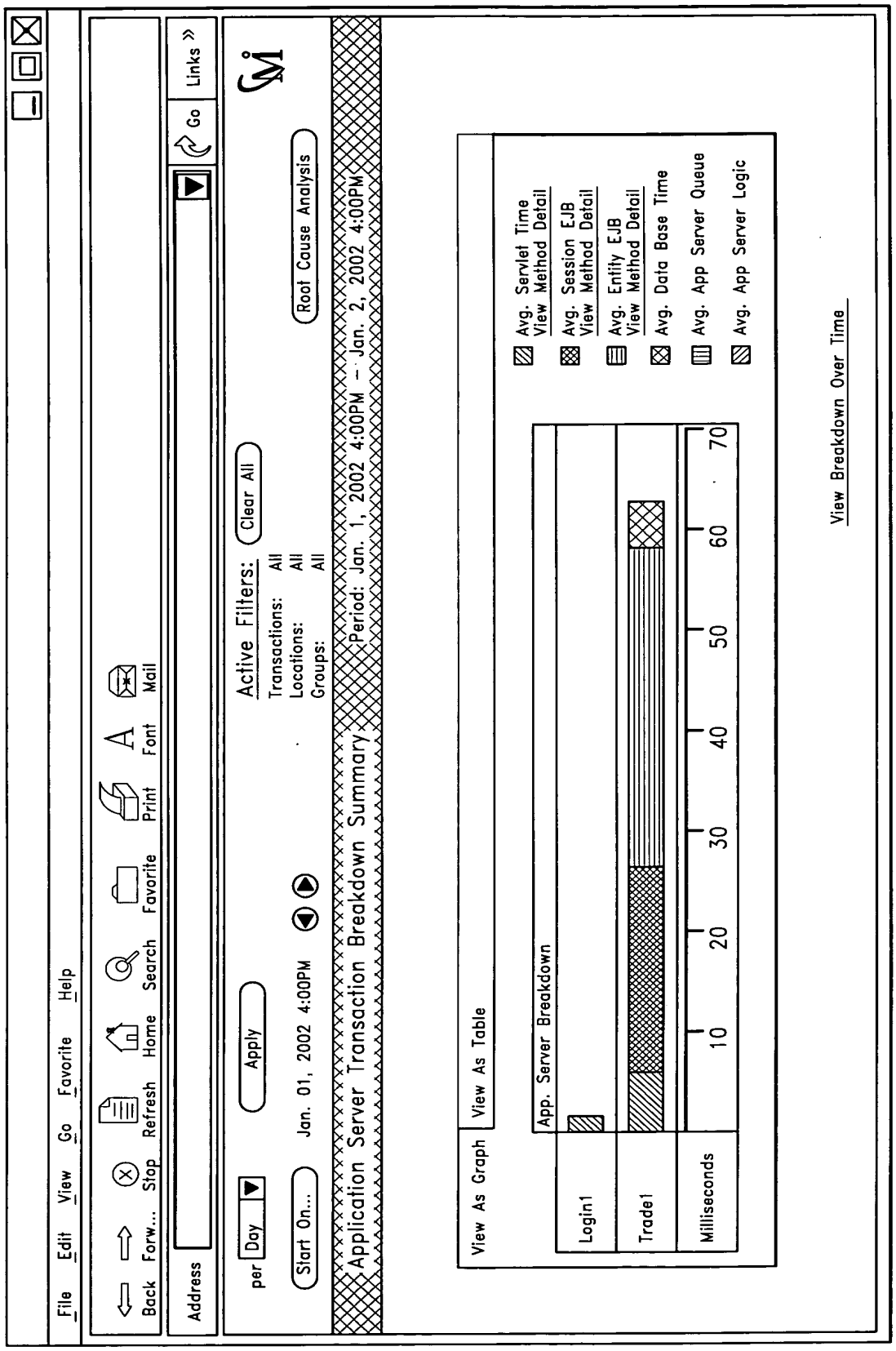

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address
Go Links »
Application Server Transaction Breakdown Summary
per Day Apply
Start On... Jan. 01, 2002 4:00PM
Active Filters: Clear All
Transactions: All
Locations: All
Groups: All
Root Cause Analysis
Period: Jan. 1, 2002 4:00PM - Jan. 2, 2002 4:00PM
View As Graph View As Table
App. Server Breakdown
Login1
Trade1
Milliseconds
10 20 30 40 50 60 70
Avg. Servlet Time View Method Detail
Avg. Session EJB View Method Detail
Avg. Entity EJB View Method Detail
Avg. Data Base Time
Avg. App Server Queue
Avg. App Server Logic
View Breakdown Over Time

FIG. 3

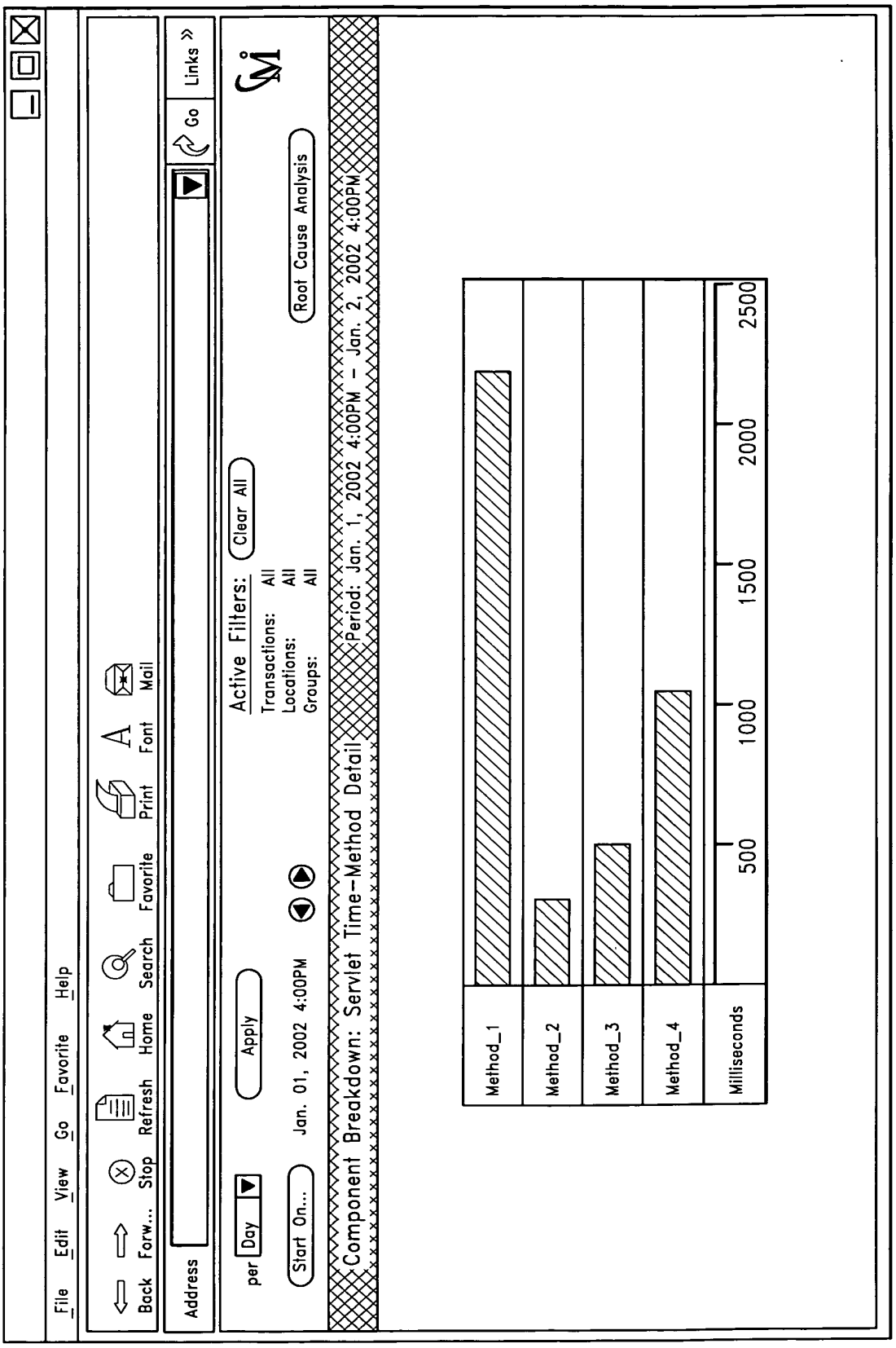
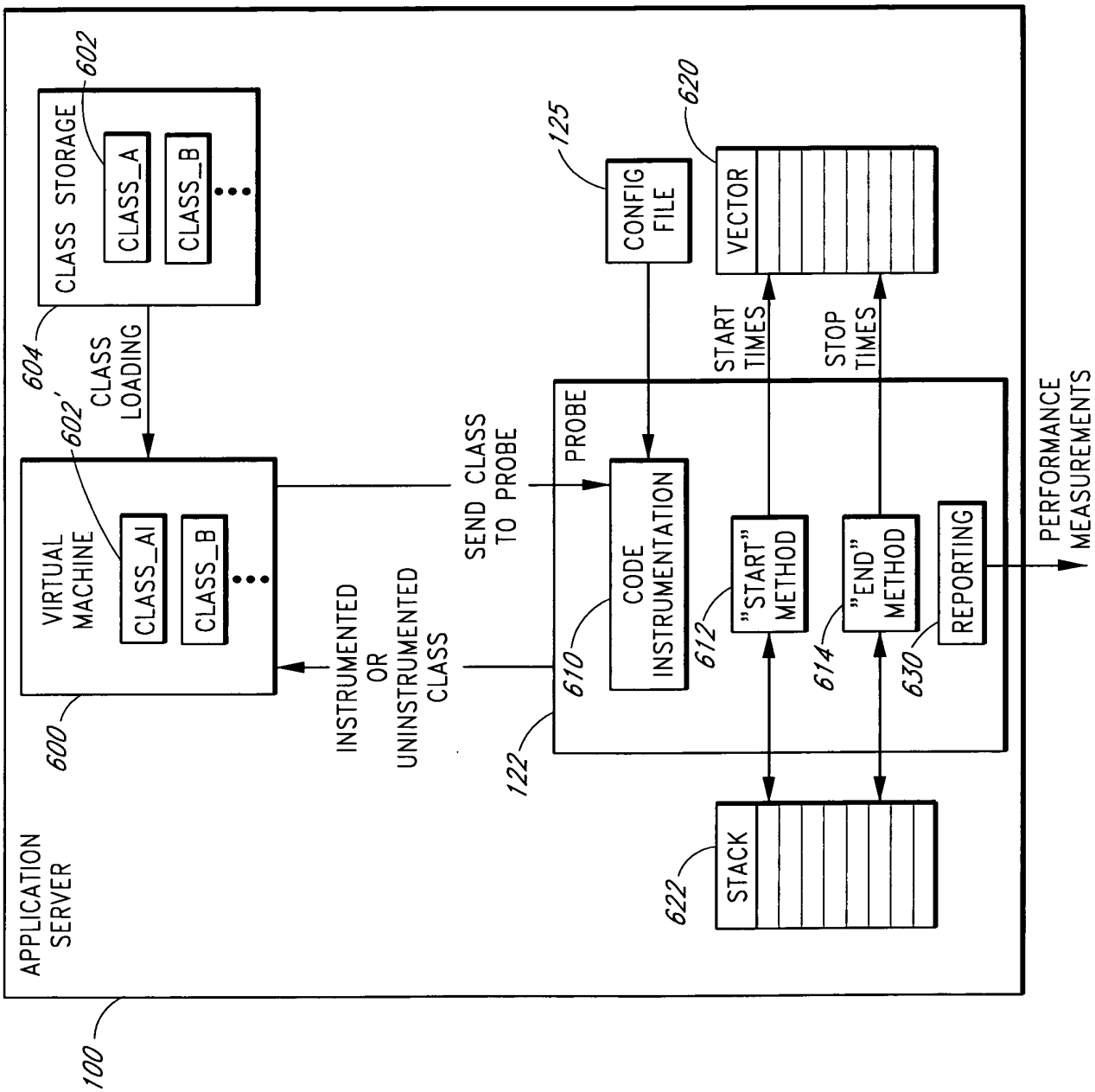

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address
Go Links »
per Day
Apply
Start On... Jan. 01, 2002 4:00PM
Active Filters:
Clear All
Transactions: All
Locations: All
Groups: All
Root Cause Analysis
Component Breakdown: Servlet Time-Method Detail
Period: Jan. 1, 2002 4:00PM - Jan. 2, 2002 4:00PM
Method_1
Method_2
Method_3
Method_4
Milliseconds
500
1000
1500
2000
2500

FIG. 4

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address
Go Links »
per Week by Transaction
Start On... Jan. 09, 2002 12:00 AM Apply Clear Filters Root Cause Analysis
Transaction Breakdown
Period: Jan. 9, 2002 12:00AM - Jan. 15, 2002 11:59PM
Profile: SampleReport
93 total transactions
DNS Resolution
Connection
Server Time
Server/Network Overlap
Network Time
Client Time
Active filters showing only: Location New York
Data Table
Size (KB)
Breakdown
login_user 52.80 View Application Server Breakdown
register_new_user 43.38
stock_5day_chart 44.85 View Application Server Breakdown
symbol_lookup 51.87
view_portfolio 45.75
Milliseconds
2860
5720
8580
11440
14300
Displays a breakdown of transaction response time by server, network, and client times. Use this report to determine whether poor transaction response times are being caused by server or network problems, or client delays. More...

FIG. 5

FIG. 6


APPLICATION SERVER
100
VIRTUAL MACHINE
CLASS_AI
CLASS_B
600
602'
CLASS LOADING
604
CLASS STORAGE
602
CLASS_A
CLASS_B
INSTRUMENTED OR UNINSTRUMENTED CLASS
SEND CLASS TO PROBE
PROBE
122
CONFIG FILE
125
CODE INSTRUMENTATION
610
"START" METHOD
612
"END" METHOD
614
REPORTING
630
VECTOR
620
START TIMES
STOP TIMES
STACK
622
PERFORMANCE MEASUREMENTS

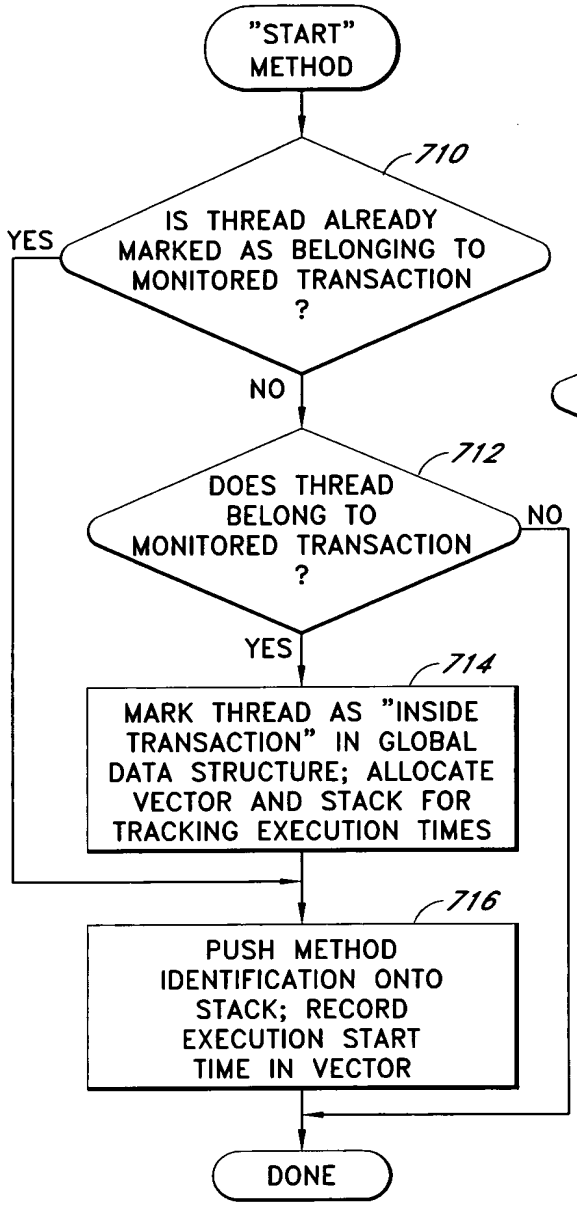

"START" METHOD
710
IS THREAD ALREADY MARKED AS BELONGING TO MONITORED TRANSACTION ?
YES
NO
712
DOES THREAD BELONG TO MONITORED TRANSACTION ?
NO
YES
714
MARK THREAD AS "INSIDE TRANSACTION" IN GLOBAL DATA STRUCTURE; ALLOCATE VECTOR AND STACK FOR TRACKING EXECUTION TIMES
716
PUSH METHOD IDENTIFICATION ONTO STACK; RECORD EXECUTION START TIME IN VECTOR
DONE

FIG. 7A

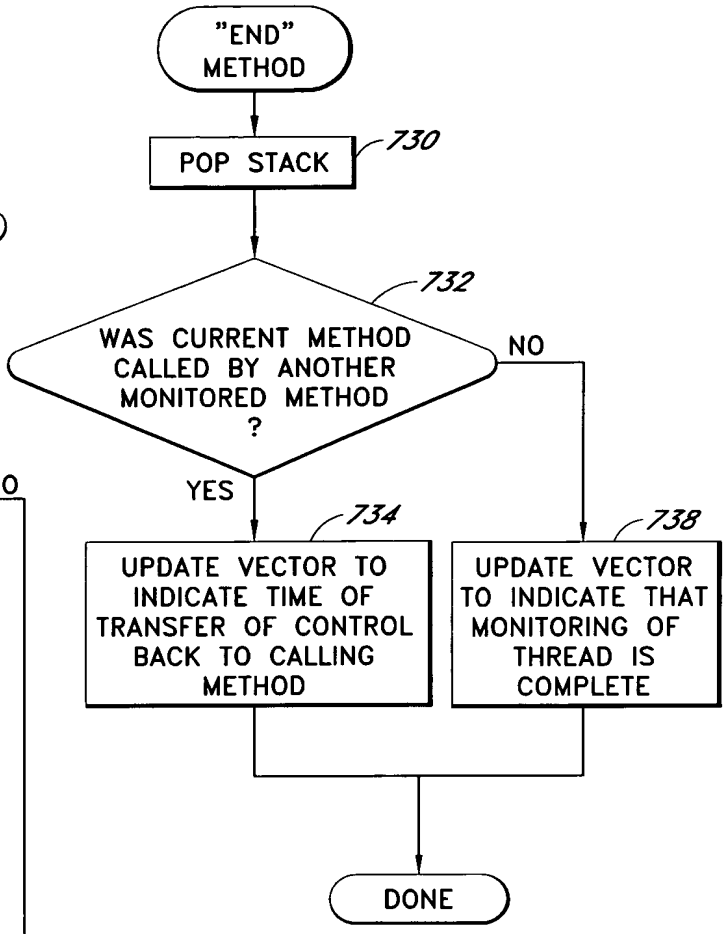

"END" METHOD
POP STACK
730
732
WAS CURRENT METHOD CALLED BY ANOTHER MONITORED METHOD ?
NO
YES
734
UPDATE VECTOR TO INDICATE TIME OF TRANSFER OF CONTROL BACK TO CALLING METHOD
738
UPDATE VECTOR TO INDICATE THAT MONITORING OF THREAD IS COMPLETE
DONE

FIG. 7B

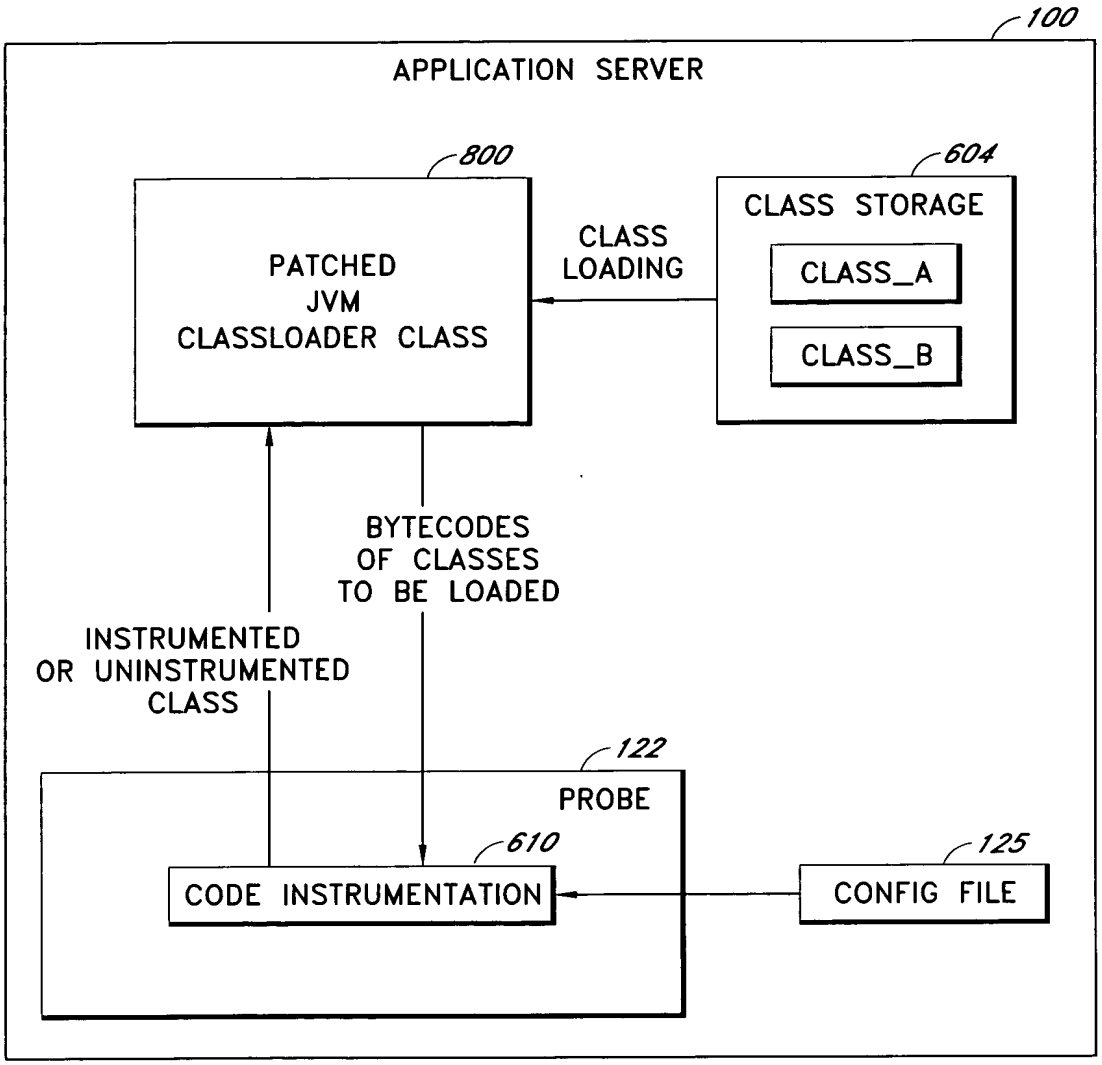

100
APPLICATION SERVER
800
PATCHED
JVM
CLASSLOADER CLASS
CLASS
LOADING
604
CLASS STORAGE
CLASS_A
CLASS_B
BYTECODES
OF CLASSES
TO BE LOADED
INSTRUMENTED
OR UNINSTRUMENTED
CLASS
122
PROBE
610
CODE INSTRUMENTATION
125
CONFIG FILE

FIG. 8A

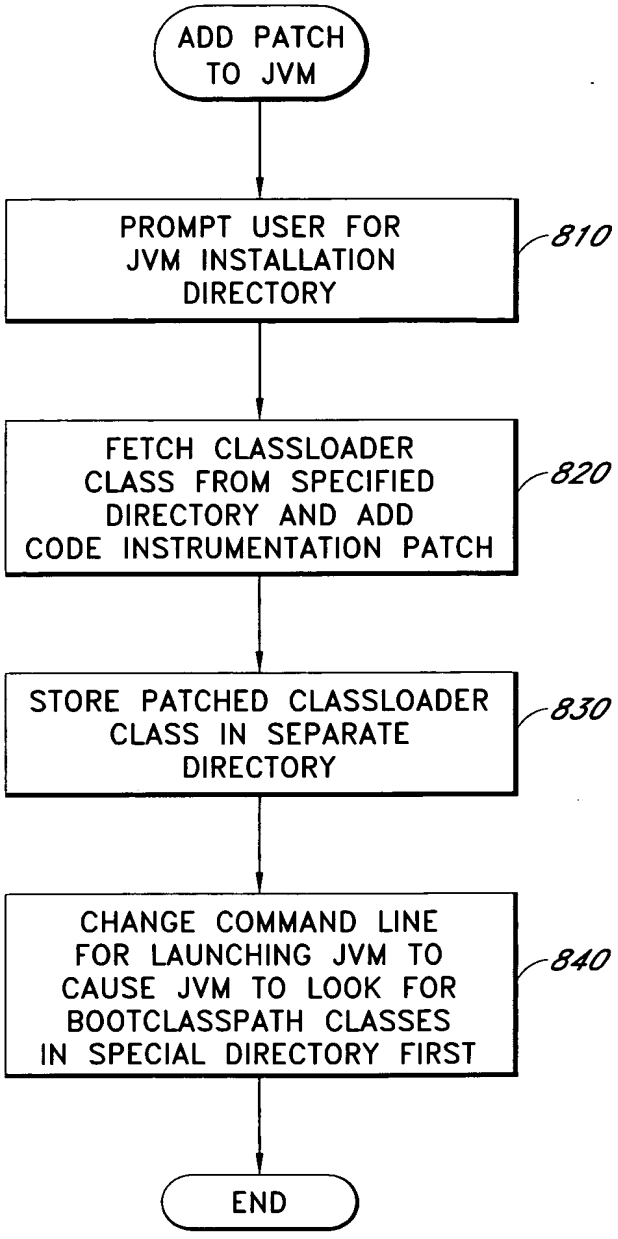

ADD PATCH TO JVM
PROMPT USER FOR JVM INSTALLATION DIRECTORY
810
FETCH CLASSLOADER CLASS FROM SPECIFIED DIRECTORY AND ADD CODE INSTRUMENTATION PATCH
820
STORE PATCHED CLASSLOADER CLASS IN SEPARATE DIRECTORY
830
CHANGE COMMAND LINE FOR LAUNCHING JVM TO CAUSE JVM TO LOOK FOR BOOTCLASSPATH CLASSES IN SPECIAL DIRECTORY FIRST
840
END

FIG. 8B